Avoidance and Minimization Measures

The following avoidance and minimization measures (AMM) would be incorporated into YWA's project activities to assist in mitigating the potential environmental effects during construction. Table 1 summarizes the general AMMs.

Table 1. Summary of avoidance and minimization measures.

Number	Title	Summary
AMM 1	Timing of-In Water Work	Timing of construction would occur during the dry season. Construction activities would not occur at night.
AMM 2	Worker Training	Construction personnel would undergo training and education on applicable environmental rules and regulations, and measures necessary to avoid or minimize effects to sensitive resources.
AMM 3	Construction Best Management Practices (BMPs) and Monitoring	Standard practices and measures that would be implemented prior to, during, and after construction to avoid or minimize impacts to water quality, aquatic habitat, and listed species.
AMM 4	Stormwater Pollution Prevention Plan	A Stormwater Pollution Prevention Plan (SWPPP) would be prepared and implemented for the Proposed Action. The SWPPP would contain measures to minimize pollutants in stormwater discharges during and after construction to prevent water quality degradation due to the Proposed Action.
AMM 5	Erosion and Sediment Control	Measures would be implemented to minimize short-term and long-term erosion, including utilization of straw wattles and other erosion protection measures.
AMM 6	Dispose and reuse of excavated materials.	Measures for handling, storage and disposal of excavated materials and dam infrastructure (i.e., glory hole).
AMM 7	Fish relocation plan	Measures for fish relocation out of Cottage Creek Reservoir into New Bullards Bar Reservoir.
AMM 8	Environmental protection measures	Measures to ensure red legged frog and other species with the potential to occur at the project site are not impacted by the Proposed Action
AMM 9	Construction site clean-up	Includes revegetation plan and removal of all construction equipment.

AMM 1: Timing of Work

AMM 1 consists of the following measure related to the timing of in-water work.

- Access to the work site would occur during the working hours of 7:00 am to 6:00 pm Monday through Friday inclusive, excluding legal holidays.

AMM 2: Worker Training

AMM 2 consists of the following worker training measure.

- All contractors and equipment operators would be given Worker Environmental Awareness Program (WEAP) training to make them aware of the ecological value of the site, including the potential for special-status species and their habitats to be present near the project site, and educate them on how to best avoid impacting the biota and aquatic resources including the lower Yuba River.

AMM 3: Construction Best Management Practices (BMPs)

AMM 3 consists of the following construction BMPs.

- All stockpiling of materials would occur away from all Waters of the United States.
- Fueling, lubrication, maintenance, storage, and staging of vehicles and equipment would be conducted in a manner that would prevent discharges to any Waters of the United States.
- Fuel transfer vehicles would have absorbent pads, pillows, socks, booms or other spill containment materials placed under the fueling operation.
- Staging, and both temporary and long-term material disposal areas would be located away from Waters of the United States.
- Fuel transfers would take place at least 100 feet from exclusion zones, drainages and streams.
- Personnel involved in the Proposed Action would be trained in emergency response and spill containment techniques.
- Petroleum products would be stored in non-leaking containers at impervious storage sites from which runoff is not permitted to escape.
- Materials and debris from all work areas would be removed following completion of the Proposed Action.
- Fugitive dust would be minimized by watering or implementing other dust control measures.
- Fugitive dust would also be minimized by minimizing areas cleared (i.e., storage areas, staging areas, stockpile areas and vehicle parking), limiting construction vehicle speeds to 15 miles per hour or less, covering haul vehicles, installing wheel washers or other similar methods where vehicles exit the construction sites onto paved roads.
- A fire plan would be developed to include preventative measures, emergency procedures to be followed, current emergency telephone numbers, and an area map.
- No fires would be allowed.
- In extreme weather and/or when fuels are excessively dry, no chainsaw work would be conducted.

AMM 4: Stormwater Pollution Prevention Plan (SWPPP)

AMM 4 consists of preparation of a SWPPP pursuant to the State Water Resources Control Board National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (Order No. 2009-0009-DWQ/NPDES Permit No. CAS000002). The SWPPP shall include specific BMPs to avoid and minimize impacts on water quality during construction activities. The goals of the SWPPP would generally be to protect water quality; establish procedures to minimize accelerated soil erosion; and minimize non-stormwater runoff. The SWPPP would define measures to prevent, control, and minimize impacts from a spill of hazardous, toxic, or petroleum substances during construction of the Proposed Action, as well as a description of potentially hazardous and non-hazardous materials that could be accidentally spilled, potential spill sources, potential spill causes, proper storage and transport methods, spill containment and recovery measures, agency notification, and responsible parties. Components of the SWPPP would generally include measures that limit risk of release of contaminates to waterways. The SWPPP would have the following primary objectives.

- Stabilization of the site as soon as possible.
- Protection of slopes and channels.
- Reduction of impervious surfaces and promotion of infiltration.
- Controlling the perimeter of the project site.
- Protection of all nearby receiving waters.
- Following all necessary pollution prevention measures.
- Minimization of the area and duration of exposed soils.

AMM 5: Erosion and Sediment Control

AMM 5 consists of the following erosion and sediment control measures.

- All feasible avoidance and minimization measures would be implemented to control erosion and runoff from areas associated with construction activities.
- Install weed-free straw waddles, straw bales, weed-free fiber rolls or silt fencing, as necessary, to capture sediment.
- Install wind erosion control features (e.g., application of hydraulic mulch or bonded fiber matrix).
- Restore exposed earthwork with seed and mulch as soon as construction is complete

AMM 6: Dispose and Reuse of Excavated Materials

AMM 6 consists of the following measures for disposal and reuse of excavation materials.

- A portion of the storage site would be set aside for the materials that would be used for backfill.
- Removed vegetative material would be chipped, stockpiled, and spread as mulch over the project site once earthwork is complete, when practical.
- The contractor would remove all debris, rubbish, and other materials that cannot be salvaged and dispose of them at an approved disposal site.

AMM 7: Fish Relocation Plan

AMM 7 consists of the following measures for relocating any fish present in Cottage Creek Reservoir.

- Fish relocation would only be performed by qualified fisheries biologists who have experience with fish capture and handling. The fisheries biologist would be present onsite during the entire dewatering process.
- The fisheries biologist would measure air and water temperatures throughout the fish relocation process to ensure water temperatures do not exceed 18 degrees Celsius. Fish capture methods would include seining and dip netting.
- Seines would have a mesh size that is appropriate to ensure entrapment of residing fish and age classes.
- Fish handling would be kept to a minimum, but if fish handling is necessary the biologist would wet hands prior to touching the fish.
- Fish would be retained for the shortest possible time to ensure stress is minimized.

AMM 8: Environmental Protection Measures

AMM 8 consists of the following measures to ensure protection of red legged frogs and other species with the potential to occur at the project site during construction.

- Optimal period for construction is during the dry season, June - September, when the frog is unlikely to be dispersing from adjacent critical habitat.
- To prevent inadvertent entrapment of animals during construction, all excavated, steepwalls, holes or trenches will be provided with one or more escape ramps constructed of earth fill or wooden planks. Before such holes or trenches are filled, they will be thoroughly inspected for trapped animals, including the frog.
    - All trenches will be inspected every morning prior to commencement of work to make sure the frog, or other wildlife, are not in the trenches.
    - In the unlikely event that a frog or other wildlife is found in any trench, work will stop until it leaves on its own and before the commencement of construction activities.
- Pesticides will only be applied with Forest Service approval; in compliance with all federal, state and local regulations; and with the following conditions:
    - Do not apply herbicides within 300 ft of wetlands, riparian areas, or water features;
    - When applying herbicides between 300 and 500 ft of wetlands, use only wiping or wicking applications;
    - Do not spray herbicides within one mile upwind of any wetland or water feature;
    - Do not apply any herbicides if rainfall is predicted in the s-day forecast; and
    - Do not apply herbicides within 150 ft of any ephemeral stream.

AMM 9: Construction Site Clean-up

AMM 9 consists of the following construction site clean-up measures.

- The revegetation palette would not contain any plants listed on the California Invasive Plant Council Invasive Plant Inventory, which can be accessed online at http://www.cal-ipc.org/ip/inventory/weedlist.php.
- The USFS Native Plant Materials Policy (USFS 2012) will be followed for any erosion control or planting/seeding.
- All construction supplies, materials, and debris from the Proposed Action would be removed following completion of the Proposed Action.